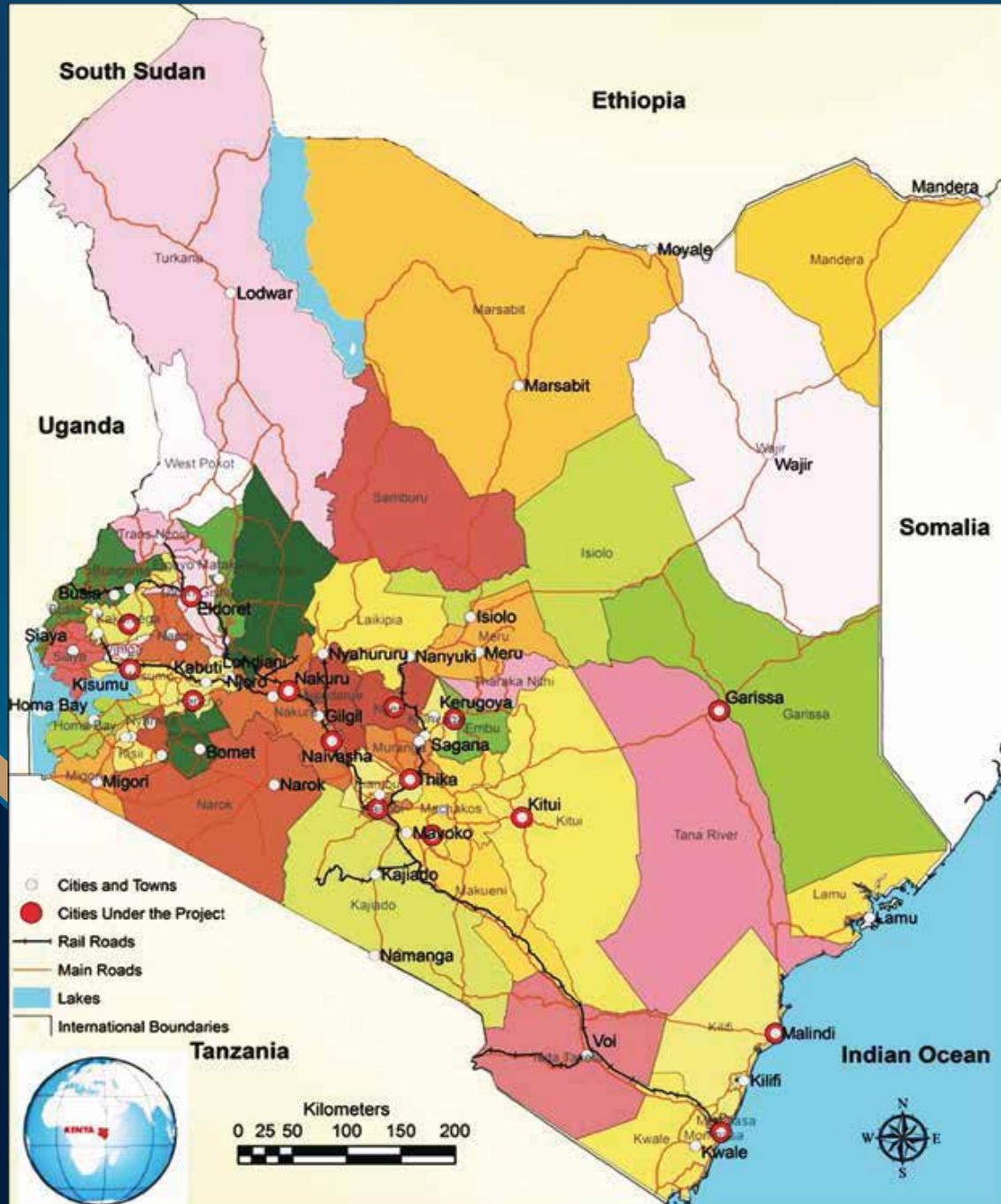


Kenya

STATE OF THE CITIES



KAKAMEGA



KENYA STATE OF THE CITIES BASELINE SURVEY

STATISTICAL ABSTRACT FOR KAKAMEGA, KENYA

TABLE OF CONTENTS

Abbreviations	i
Kenya State of the Cities Survey: Cities Covered	ii
Acknowledgements	iii
Introduction	iv
Background	iv
Methodology	iv
Questionnaire	v
Data Quality	v
Table Presentation	v
HOUSEHOLD CHARACTERISTICS	7
A.1 Household Demographic Composition	7
A.2 Household Education Characteristics	8
A.3 Household Health Profile	10
HOUSEHOLD ECONOMIC PROFILE	11
B.1 Household Occupational Composition	11
B.2 Household Income/Expenditure Levels	12
B.3 Household Wealth Composition	15
B.4 Household Finance	16
DWELLING TENURE, SECURITY, AND CHARACTERISTICS	19
C.1 Household Dwelling Characteristics	19
C.2 Home and Land Ownership	21
C.3 Distribution of Housing Values and Rents	22
C.4 Neighborhood Social Capital and Civic Participation	23
INFRASTRUCTURE SERVICES	25
D.1a Water Access	25
D.1b Water Quality	27
D.2a Electricity and Waste-Disposal Services	28
D.2b Access to Sanitation Services	29
D.3 Access to Transport	30
D.4 Access to Communications	31
D.5 Access to Infrastructure Indicator	31
Conclusions	33

LIST OF TABLES

Table 1: Description of formats used to denote statistical significance	4
Table A.1: Household demographic characteristics	8
Table A.2: Household education characteristics	9
Table A.3: Household health characteristics	10
Table B.1: Household members' main activity	12
Table B.2a: Monthly household spending power, as measured by expenditure	14
Table B.2b: Monthly household spending power, as measured by income	15

Table B.3: Household wealth composition	16
Table B.4: Household finance	17
Table B.5: Household-owned business profile	18
Table C.1: Household dwelling characteristics	20
Table C.2: Household residence and land tenure	21
Table C.3: Distribution of housing values and rents	22
Table C.4a: Neighborhood social capital and civic participation	24
Table C.4b: Neighborhood social capital and civic participation	24
Table D.1a: Water access	26
Table D.1b: Water quality	27
Table D.2a: Access to electricity and waste-disposal	28
Table D.3: Access to transport	30
Table D.4: Access to communications	31
Table D.5: Access to infrastructure indicator	32

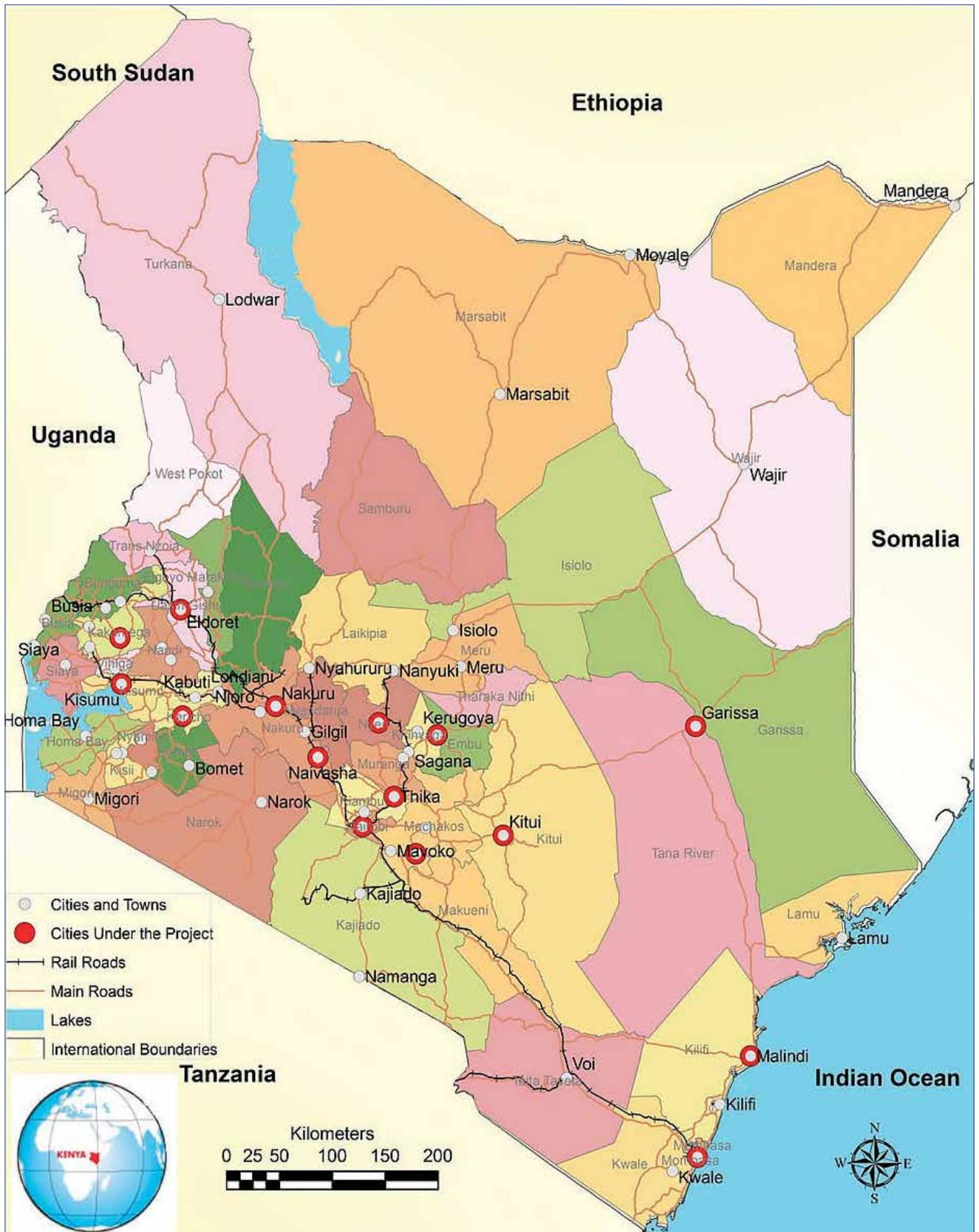
LIST OF FIGURES

Figure 1: Development diamond	33
Figure 2: Infrastructure polygon	33
Figure 3: Living conditions diamond	34

ABBREVIATIONS

CAPI	Computer Assisted Personal Interview
EA	Enumeration Area
GOK	Government of Kenya
HH	Household
HUD	U.S. Department of Housing and Urban Development
KIHBS	Kenya Integrated Household Budget Survey
KISIP	Kenya Informal Settlements Improvement Program
KMP	Kenya Municipal Program
KNBS	Kenya National Bureau of Statistics
NMSP	Nairobi Municipal Service Project
PDA	Personal Digital Assistant, in this case a hand held computer used by interviewers
PSU	Primary Sampling Unit
SMSA	Standard Metropolitan Statistical Area
SRS	Simple Random Sample
SSU	Secondary Sampling Unit
WB	World Bank
WBG	World Bank Group

KENYA STATE OF THE CITIES BASELINE SURVEY: CITIES COVERED



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INTRODUCTION

Background

The Kenyan government, with the support of development partners, is increasing its investments in urban infrastructure and services. To support these efforts, the World Bank has contracted NORC at the University of Chicago to carry out a baseline study of the demographic, infrastructure, and economic profiles of fifteen Kenyan municipalities: Nairobi City, Mombasa, Naivasha, Nakuru, Malindi, Eldoret, Garissa, Embu, Kitui, Kericho, Thika, Kakamega, Kisumu, Machakos, and Nyeri. This was undertaken in order to deepen understanding of the cities' growth dynamics, and to identify specific challenges to quality of life for residents. The study, called the "Kenya State of the Cities Baseline Survey," collects and analyzes household survey data to produce key statistics and identify differences in conditions among types of households—especially differences between those living in informal versus formal settlements. The ultimate goal is to use the information to establish development priorities for infrastructure and service investments and, eventually, to track the effectiveness of these investments.

Prior to the state of the cities survey, there were little data available to support the design of programme to improve infrastructure and related services in most Kenyan cities. While there have been several household surveys of Nairobi's informal settlements and numerous analyses using the data, few surveys or analyses have been carried out in other Kenyan municipalities or for modest-income areas in Nairobi.

To facilitate access to the rich datasets generated by the survey, three written products were commissioned: a Statistical Abstract (such as this one) for each city, a City-at-a-Glance for each city (a two-page summary of the Abstract), and an Overview Report (a more comprehensive discussion of the topics in this Introduction, a topic-by-topic comparative analysis of the fifteen cities, and appendices with the survey instrument). The abstract's objective is to provide comprehensive but easily accessible information on the wide range of municipal conditions covered in the survey, as reported by households. Some information in the abstract also comes from secondary sources, such as the national census and the Kenya Integrated Household Budget Survey (KIHBS). The primary audience for the abstract includes policy makers, development practitioners, development partners, civil society organizations, and urban residents. Better planning and more productive investments can result from exploiting the information in each city's abstract.

Methodology

For this baseline household survey, NORC used a two and three-stage, stratified, clustered sampling design intended to be representative of poor and non-poor households living in formal and informal settlements in the fifteen cities included in the study. The first-stage sampling frame was based on Kenya's 2009 census frame of enumeration areas (EAs). In the census sample frame, EAs are identified as urban, peri-urban or rural. EAs are further identified as containing formal or informal settlement types. For the first stage sampling, NORC selected EAs from strata identified as informal (slum), urban-formal, peri-urban-formal and rural. In cases where the EAs were "large" (200 to 700 households), they were divided in half, thirds, or quarters and one segment was randomly selected.

For the final stage of sampling, NORC carried out a full household listing in each selected EA (or segment, as the case may be) and randomly selected ten households for interviewing.¹ Because expected response rates were unknown prior to data collection, interviewers were given a target to complete at least seven interviews in each EA. In Kakamega, 136 EAs were selected in the first stage.² In the second stage, a total of 9,574 households were listed and 1,045 households were selected.

The data for this report are based on 740 completed interviews carried out in Kakamega from July 14, 2012 to November 12, 2012 by a team of eight interviewers and one supervisor. Among eligible households,³ the completion rate was 67.68%.⁴ Data collection took place in both formal and informal settlements simultaneously; 491 interviews were completed in informal and 485 were completed in formal ones.

Questionnaire

The Kenya state of the cities baseline questionnaire was developed iteratively using a base set of questions developed by the World Bank and refined to capture the key variables related to infrastructure access and municipal services of interest to the Kenyan government. The final fielded questionnaire is available in Volume II of the Overview Report. The household listing form and the questionnaire were programmed for use as a Computer-Assisted Personal Interview (CAPI) and both were carried out using 7-inch Samsung Galaxy Tab tablet computers which transmitted data to project servers via the mobile phone network. Interviewers used the tablet computers to capture GPS coordinates once during listing and again at the end of each interview.

Data Quality

Recorded administration time of the CAPI instrument showed a median duration of 29 minutes in Kakamega (21 minutes across all municipalities). However, duration values may have been compromised by transmission problems and supervisor reviews, which may have overwritten timestamps. Despite the uncertainty of exact durations, data quality measures do not show systematic interviewer-related errors in the final data. Approximately one-third of all interviews underwent validation, including call-backs by supervisors or central office staff (in-person and by phone).

Table Presentation

Each city's abstract includes a set of tables designed to provide basic information on households' economic and demographic conditions, their housing conditions, and access to infrastructure and services. One challenge in preparing the abstract was to provide a complete picture of conditions while still being selective in the information presented so as not to overwhelm the reader. A second challenge was to display the information in a way that permits stakeholders to understand conditions faced by different population groups.

To meet these challenges we have developed a set of tables with items believed to be most important for stakeholders and have broken down the items in several ways. In addition to providing an overall picture of household (HH) characteristics, the tables illustrate whether household characteristics differ by key factors.

¹ A complete description of the sampling design is found in "Kenya Municipal Program State of Cities: Overview Report," NORC, August 2013.

² 106 EAs were included in the listing activity. One EA did not include any households and therefore was dropped from the sample.

³ Eligible households are defined as occupied dwellings with at least one resident age 18 or older who is present during the field period.

⁴ The completion rate is the number of households that successfully completed an interview over the total number of households assigned.

The rows of each table generally list the household characteristics (e.g., size of household, percentage of children in school). The columns present statistics for the entire city, then show how the data differs by location (informal vs. formal areas), household poverty status (poor vs. non-poor), gender of the head of household (male vs. female headed, for informal areas only), as well as other factors pertinent to the particular table.⁵

From each table, one can quickly observe if there are large differences in household characteristics by location, spending power, etc., simply by comparing the cells (numbers). Each table also shows whether the observed differences are statistically significant.⁶ “Statistically significant” means that statistical analysis has revealed that a difference, no matter how small or large, is unlikely due to chance or randomness. In practice, statistically significant differences are the ones researchers are interested in—they can be interpreted as telling us about meaningful differences in household characteristics by location, spending power, gender, or other category. When we discuss differences in the text of this report, we will refer to “statistically significant” differences unless otherwise noted.

In terms of policy decisions, whether differences matter is a combination of whether they are statistically significant and how large the differences are. Ultimately, it is up to the policy practitioner to decide how large a difference must be to matter in the context of interest. An important note when interpreting results is that statistical significance does not imply causality. In other words, if differences in values are statistically significant, this does not mean that one variable caused a change in the other variable. Another factor may be influencing both variables; for example, for we may find a “significant” difference between head-of-household education and household poverty, perhaps the key common cause is social status, which affects both their educational attainment and job/spending opportunities. Additionally, where a statistically significant difference is identified it does not imply the direction of the relationship. Perhaps the household poverty is the reason for the different education levels, or vice-versa. In this report, therefore, we will say a household characteristic is “associated with” or “correlated” with certain factors, rather than saying one is caused by another.

In order not to clutter the tables yet provide the reader with the maximum information, we mark statistically significant results in the tables with bold (for two adjacent values in the same row) and italics (to compare adjacent columns of data). Underlined values denote an insufficient number of household responses for some enumeration category of the sampling design to perform a test of statistical significance. The number of observations for a particular variable is noted in the tables in rows denoted by “N”. Cells with no observations are indicated with hyphens (-).⁷ The table, below, summarizes the formatting used in tables throughout the Abstract: A value that is both bold and italicized indicates statistically significant differences for two adjacent cells (i.e., values in the same row) as well as for the distributions between adjacent columns. In contrast, a value in standard font-no bolding, italics, or underlining-still means that a significance test was performed but that the values under comparison were not statistically significantly different from each other.

⁵ Informal/formal status was defined at the enumeration area level by the Kenya National Bureau of Statistics during the 2009 Census. Poor/non-poor is defined using the answer to a question asking respondents whether their total household expenditure in the last month was above or below a poverty line calculated using the household size (5,567 KSh for each adult 15 years and older + 3,619 KSh for each child aged 5 to 14 + 1,336 KSh for each child under 5 years old).

⁶ Statistical significance is noted when a test achieves a p-value ≤ 0.05 .

⁷ Regarding issues of non-response, both observational and item-specific, see Section 4, below.

There is one caveat to the formatting rules that must be addressed regarding the significance testing of distributions. While the absence of italics sometimes means that the distribution was tested and was not found to be statistically significant, this is often not the case i.e., there are many distributions which were not tested for significance. To avoid confusion, the comprehensive list of distributions which were tested for significance follow.

- **Table B.2a:** Expenditure ranges by location, tenure, water connection, business, skilled/unskilled head, and gender of household head (in informal areas)
- **Table B.2b:** Income ranges by location, tenure, water connection, business, skilled/unskilled head, and gender of household head (in informal areas)
- **Table C.3:** Distribution of home value ranges and rent ranges by location, tenure, water connection, business, skilled/unskilled head, and gender of household head (in informal areas)
- **Table D.1a:** Percent of households with a piped water connection inside their dwelling by security of ownership; percent of households with a piped water connection inside their compound by security of ownership; percent of households close to piped water access by security of ownership; cost of water by security of ownership; most important water source by security of ownership; reasons for no connection by security of ownership
- **Table D1.b:** Water source by water quality; water provider by water quality; water treatment buy water quality; treatment methods by water quality.

Table 1: Description of formats used to denote statistical significance

Format	When we use it	Example
Bold	Two bolded values in the same row next to each other indicate that the difference is statistically significant. We also use bold for ‘Yes’ or ‘No’ variables. If bold, it means that the difference between the mean of households that answered ‘yes’ (displayed) and the mean of those that answered ‘no’ (not displayed) is statistically significant. ^a	Table A.1 displays the mean household size for households located in formal and informal settlements; if the pair of values is bold, it means that the difference in household sizes between formal and informal areas is statistically significant. Table B.2 displays the proportion of households which own land (or have tenure) that fall below the poverty line. If bold, it means that this proportion is statistically significantly different from the proportion of households which do not own land that fall below the poverty line.
<i>Italics</i>	We indicate statistically significant differences between columns of three or more cells using italics; this means the difference between the entire distributions (columns) is statistically significant. ^b	Table B.2, Monthly household spending power, displays the distribution of households across income and expense ranges. If values appear italicized in both columns for households located in formal and informal settlements, the difference between the two distributions is statistically significant.
<u>Underline</u>	Denotes values where, due to lack of data at the census tract (enumeration area, or EA) level, it was not statistically possible to conduct the significance test. ^c	Table B.3 shows the mean value of households’ primary residence with and without land, and of any other residence and/or land. An underlined value means that due to lack of data at the census tract level, it is not possible to perform a test for significant differences.
Hyphen (-)	In cases where there are no data for a cell at all, we note that with a hyphen (-).	Table B.3 shows data related to household finance. For the percentages of households according to source of financing, the cells that display a hyphen means that there were no observations for that particular variable and category.

Notes:

a. Here a p-test from an Adjusted Wald test is conducted.

b. Here Pearson’s Chi-squared test is conducted.

At least two households are required to compute a household-level variance, which is required to conduct a hypothesis test. Note that this does not imply that the respective table values are based on just one household or even just one EA.

Another feature of the data worth mentioning is that outliers (responses that are very different from all the others) were not a major issue in the survey data, affecting just three variables in any important way.⁸

Finally, note that in tables presenting a distribution of responses, if some response categories are left out then the distribution will not add up to 100%. In cases where all response categories are listed then the first row of responses is given as 100. Unless otherwise noted, all figures presented in the tables are percentages.

The core of this abstract comprises a set of tables divided into chapters. Each chapter contains a textual summary of each table and highlights some of their implications. The tables are divided into four groups:

- A. Household characteristics – 3 tables
- B. Economic profile – 5 tables
- C. Tenure, tenure security, dwelling characteristics – 4 tables
- D. Infrastructure services – 7 tables

Notes to the tables are identified by small letters appearing as superscripts at the end of each table. All tables present weighted figures at the household level, unless otherwise noted, to reflect the total population of the respective table cell. The N values, however, present the unweighted number of households, unless otherwise noted.

The final chapter of this abstract contains a series of three “Development Polygons”. These complement the detailed tables presented in sections A through D by illustrating an “overall” sense of the state of the city. The figures included are the Development Diamond, the Infrastructure Polygon, and the Living Conditions Diamond.⁹

While the tables generally have a common set of column headings, there is some variation. The following are definitions for those headings that require clarification:

- *Informal/Formal Areas* – This distinguishes between areas based on whether most households in the area have property title and official services. It is a designation provided by a status code at the level of the EA (Enumeration area) as used by the National Census.
- *Gender (Informal)* – For the households living in the locations coded as “Informal,” data for household characteristics are provided for both male- and female-headed households. As is standard, the male-headed households may contain the spouse while female-headed households do not.
- *Class (of durable)* – Durable assets are a standard measure of household wealth. They are grouped into three classes, roughly based on their likely market value and degree of permanence. The actual items in each class are indicated in the table. The values reported for these categories are the number owned by the household, not their average or total value.
- *Spending Power* – The total value of household expenditures collected by the survey, excluding rent or mortgage payments.

⁸ Across all fifteen municipalities these were (i) home value, in which 20 responses were reported in millions units instead of as the value itself (so we simply divided these responses by a million); (ii) 40 respondents reported travel time for a weekly or monthly commute rather than a daily commute (these over-eight-hours responses were dropped); (iii) we removed one case in which the time to get water was over a week.

⁹ The basic format for all three figures appear in the World Bank Policy Research Working Paper, “Poverty, Living Conditions, and Infrastructure Access” A Comparison of Slums in Dakar, Johannesburg, and Nairobi” by Sumila Gulyani, Debabrata Talukdar, and Darby Jack (2010). We strived to make our own figures as similar as possible, though some deviations, noted in the accompanying text, were necessary.

- *Access to Infrastructure* – This indicator combines six categories of infrastructure (divided into 13 subcategories) weighted by importance to the household and summed to create a household indicator from 0 to 9.5. See NORC (August 2013), “Kenya Municipal Program State of the Cities: Overview Report” for a more detailed description.
- *Household Poverty* – The poverty line varies depending on the number of members of the household and their age. It is calculated by adding together:
 - 5,567 KSh per month for each adult 15 years and older in household,
 - 3,619 KSh per month for each child aged 5 to 14 in household,
 - 1,336 KSh per month for each child under 5 years old in household.

HOUSEHOLD CHARACTERISTICS

This section presents basic household characteristics. Table A.1 provides information on household size and household member distribution by age category. Table A.2 details the level of education of the members of household, as well as the proportion of children and adults of different ages who were currently in school at the time of the survey. Finally, Table A.3 presents household health characteristics, including the proportion of children under 15 who have received the BCG vaccine (an immunization against tuberculosis), a major public health concern given that Kenya is a high-tuberculosis-burden country.¹⁰ Table A.3 also includes the number of household members with an illness or injury in the two weeks prior to the survey, the proportion of those members who visited a health practitioner, average household medical expenditures for the month preceding the survey, and the percentage of households that have health insurance. All of these figures are given comprehensively and broken down by location type, the household's poverty status, and the gender of head of household (among informal areas).

A.1 Household Demographic Composition

The 2009 census estimated that the municipality of Kakamega had a population of 91,768, a 24% increase over the figure reported in the 1999 census; this represents of a 2.16% annualized average growth rate.¹¹

The average household size in Kakamega is 3.4 members, and the only statistically significant difference was by poverty status—households under the poverty line are larger; they average 3.6 members while households above the poverty line average only 3.2 members. On average, 70.6% of households' members are aged 15 to 60 years old, 14.5% are between 5 and 14 years old, 11.3% are under 5 and 3.4% are over 60. Kakamega households above the poverty line had a significantly higher percentage of 15-60 year olds (a category which would include prime working age members) than those below the poverty line; wealthier households also had a lower percentage of children 5-14 years old and adults over 60 than poorer households. The head of household is male in 73% of all households, but there was not enough data at the census tract level to test for significant differences by category. Ninety-five percent of female-headed households are located in formal areas; about half are poor.

¹⁰ World Health Organization Global tuberculosis report 2012, retrieved June 12th 2013 from http://www.who.int/tb/publications/global_report/en/

¹¹ From Statistical Abstract 2010 and Statistical Abstract 2006, Kenya National Bureau of Statistics.

Table A.1: Household demographic characteristics

Characteristic	All	Location		House hold poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Number of households							
Weighted	18,036	1,051	17,255	8,773	9,307	802	239
N (unweighted)	966	96	870	470	481	71	24
Size of household	3.42	3.20	3.43	3.63	3.20	3.10	3.58
N	966	96	870	470	481	71	24
Mean percent of household members aged:							
Total	100	100	100	100	100	100	100
Under 5	11.3	11.1	11.3	11.6	10.9	10.8	12.7
5 to 14	14.5	13.1	14.6	16.7	12.2	11.2	19.8
15 to 60	70.6	72.3	70.5	67.1	74.5	74.4	64.3
Over 60	3.4	3.5	3.4	4.4	2.4	3.6	3.1
N	966	96	870	470	481	71	24
Proportion of households...							
Male-headed	73	<u>77</u>	<u>73</u>	<u>75</u>	<u>71</u>		
Female-headed	27	<u>23</u>	<u>27</u>	<u>25</u>	<u>29</u>		
N	954	95	859	467	472		
Female-headed distribution		5	95	45	55		
N		249	244				

A.2 Household Education Characteristics

Kakamega was part of the Western Province, where, in 2009, primary classrooms had an average class size of 40 students and secondary classrooms had on average 33 students. Student-teacher ratios in the former Western Province were, on average, 71.6 for primary schools and 24.6 for secondary schools.¹²

The first panel of Table A.2 presents statistics on the education of all individuals aged 5 years and older within the surveyed households. Only 38% of all individuals have completed secondary school or higher—a figure that is likely skewed by the fact that the majority of household members includes ages spanning 15 to 60 years old—but 64% completed primary or higher. Significant differences in education level by category in Kakamega were primarily by poverty status. A significantly higher percentage of individuals in non-poor areas had higher education (23%) as compared to poor households (7%). Having no education is rare at 3% overall, although it was significantly and slightly higher in poorer households.

The second panel of the table shows the mean percent of adult individuals over 18 years within each household. This is done to show intra-household educational levels among households' adult members. We find that on average, 51.4% of a household's adults have completed secondary school or higher (30.5% completed secondary, while 20.9% completed higher education) and only 4% of households' adults had no education whatsoever. Significant differences in education level by category for adults were also primarily by poverty status. Poor households fared significantly worse than non-poor on both education measures; poor households had an average of 6.5% with no education vs. 1.8% in non-poor households, and only 10.4% of poor households had any higher education as compared to almost 31% of non-poor households.

¹² Provinces no longer exist in Kenya. This data is based on the Kenyan Institute for Public Policy Research and Analysis 2009 Economic Report, Table A3.16, pg. 192, per Ministry of Education statistics, http://www.marsgroupkenya.org/pdfs/2009/10/Kenya_Economic_Report_2009.pdf Section

The third section of the table shows enrollment figures: 96.2% of individuals aged 5 to 14 years old are currently in school; 72.8% of individuals 15 to 18 are enrolled, and 12.3% of individuals over 18 are enrolled in school (a figure which would include adults no longer planning on attending school). Perhaps surprisingly, for individuals over 18, a significantly higher number are in school in informal areas than in formal areas. By poverty status, non-poor households are significantly more likely to be in school for the over 18 age group. For the other age groups, any differences in enrollment by location, poverty status, or gender of head of household were not statistically significant or were not able to be tested for significance due to a lack of data at the census tract level.

Table A.2: Household education characteristics

Characteristic	All	Location		House hold poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of individuals 5 and older with highest grade completed:							
Total	100	100	100	100	100	100	100
None	3	2	3	4	1	1	4
Some primary	34	37	34	42	25	34	49
Completed primary	16	16	16	19	13	16	17
Some secondary	10	11	10	9	10	10	9
Completed secondary	23	19	23	19	27	21	12
Higher	15	16	15	7	23	18	9
N	2,859	269	2,590	1498	1314	197	70
Mean percent of household's adults over 18 with highest grade completed:							
Total	100	100	100	100	100	100	100
None	4.0	2.5	4.1	6.5	1.8	1.2	6.9
Some primary	14.9	18.6	14.7	23.1	6.9	15.7	28.9
Completed primary	20.2	18.5	20.3	23.9	16.5	20.8	11.4
Some secondary	9.4	10.2	9.4	9.6	9.0	7.9	14.0
Completed secondary	30.5	27.2	30.7	26.2	35.0	29.8	19.6
Higher	20.9	23.1	20.8	10.4	30.8	24.5	19.3
N	966	96	870	470	481	71	24
Percent of individuals in school by age group:							
5 to 14	96.2	<u>97.5</u>	<u>96.2</u>	<u>97.3</u>	<u>94.9</u>	<u>100.0</u>	<u>92.3</u>
N	402	<u>36</u>	<u>366</u>	<u>218</u>	<u>176</u>	<u>24</u>	<u>12</u>
15 to 18	72.8	<u>63.0</u>	<u>73.4</u>	<u>67.4</u>	<u>77.5</u>	<u>69.6</u>	<u>53.6</u>
N	204	23	181	106	95	14	9
Over 18	12.3	19.1	11.9	7.8	16.5	19.2	19.5
N	965	96	869	470	480	71	24

A.3 Household Health Profile

Kakamega was part of Western Province, which in 2005 had an average of 7.0 doctors and clinical officers per 100,000 residents and 41.1 nurses per 100,000 residents.¹³ The former Western province had an average of 12.5 medical facilities per 100,000 residents, including hospitals, clinics, dispensaries, and other types of facilities.¹⁴

Overall, 94% of households report their children under 15 have received BCG (tuberculosis) immunizations. Seventeen percent of households had a sick or injured household member in the two weeks prior to the interview and 66% of these visited a health practitioner. Household medical expenses averaged 555 Ksh in the month prior to the survey, and rates of health insurance coverage are quite low overall (24%). Percent of households with health insurance varied significantly by area type and poverty status, with those in formal areas having much higher rates of insurance (25%) than in informal areas (8%).

Table A.3: Household health characteristics

Characteristic	All	Location		House hold poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of household's children under 15 having received BCG immunization	94	89	94	92	96	85	98
N	573	54	519	294	269	39	15
Percent of households with an injured/ill member, previous two weeks	17	19	16	18	16	16	29
N	966	96	870	470	481	71	24
Percent of ill household members that visit a health practitioner, previous two weeks	66	71	65	68	64	82	49
N	167	19	148	83	82	13	6
Household medical expenditures (Ksh), previous month	555	272	572	826	306	276	271
N	960	96	864	469	476	71	24
Percent of households with health insurance	24	8	25	19	30	10	3
N	966	96	870	470	481	71	24

¹³ 2004/2005 numbers of healthcare providers obtained from Partners for Health Reform plus 2006 Report, Table A1, pg. 39, Annex A, statistics obtained from Rep. of Kenya. www.healthsystems2020.org/files/1654_file_Tech101_fin.pdf. Per capita figures calculated by dividing by 2005 (estimated) population obtained from the Kenya Integrated Household Budget Survey, Table 3.1, [http://www.knbs.or.ke/pdf/Basic%20Report%20\(Revised%20Edition\).pdf](http://www.knbs.or.ke/pdf/Basic%20Report%20(Revised%20Edition).pdf).

¹⁴ Based on most current (undated) figures from Kenya Bureau of Statistics Open Kenya online database, <https://kenya.socrata.com/Health-Sector/Health-Facility-Pie-Chart/yr4-763w>. Per capita figures calculated by dividing by 2009 census population, obtained from 2010 Statistical Abstract, Kenya National Bureau of Statistics.

HOUSEHOLD ECONOMIC PROFILE

B.1 Household Occupational Composition

Table B.1 presents the current occupation, or main activity, of household members. The first panel shows the percent of all adults over 18 in each of the occupations. The four most prominent occupation categories are casual employee, regular employee, self-employed, and homemaker, but 21.1% are unemployed. Individuals in informal areas are more likely to be self-employed or casual employees as compared to those in formal areas. Individuals in poor households were more likely to be casual employees than those in non-poor households, who were more likely to be regular employees. Individuals in poor households were four times more likely to be unemployed and not actively looking for work, and the poor were also more likely to be homemakers. Non-poor households are also more likely to have students than poor households. Female headed households were much more likely to be sick or unemployed and not actively looking for work than their male-headed counterparts. All of the aforementioned differences are significant.

The second panel shows the average percent of adults over 18 within each household that are occupied in each of the categories. This is done to show intra-household occupational status among households' adult members. The results here are similar to those in the first panel above. Here, we find that on average, about two-thirds (64.6%) of a household's adult members are either regular employees, casual employees, or self-employed. Within each household, only 13.8% are unemployed (8.6% are not looking for work, and 5.2% are looking) and 10.7% are homemakers and 7% are students. Significant differences are similar to the first table, varying by poverty status primarily. Individuals in poor households were more likely to be casual employees than those in non-poor households, who were more likely to be regular employees. Individuals in poor households were much more likely to be unemployed and not actively looking for work. Non-poor households are also more likely to have students than poor households.

Table B.1: Household members' main activity

Occupation ^a	All	Location		House hold poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of adults over 18 with occupation:							
Employer	0.0	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Regular employee	18.8	14.4	19.0	<u>14.4</u>	<u>23.2</u>	16.0	8.1
Casual employee	23.6	28.7	23.3	<u>26.0</u>	<u>21.3</u>	28.5	25.8
Self-employed	15.3	20.3	15.0	15.1	15.3	18.9	27.6
Unpaid family worker	0.4	0.0	0.5	0.6	0.3	<u>0.0</u>	<u>0.0</u>
Apprentice	0.0	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Student	9.7	11.8	9.6	5.4	13.8	11.9	11.8
Pensioner/investor	1.6	0.0	1.7	1.1	2.1	<u>0.0</u>	<u>0.0</u>
Earning from investments/ property	1.1	0.0	1.2	1.0	1.3	<u>0.0</u>	<u>0.0</u>
Sick/unable to work	0.9	0.9	0.9	1.2	0.6	0.0	4.9
Unemployed looking for work	6.9	3.3	7.1	5.2	8.6	1.9	9.6
Unemployed, not looking for work now	10.3	9.7	10.3	16.1	4.6	10.5	7.1
Homemaker	10.8	10.9	10.8	13.5	8.0	12.4	5.1
N	1,974	181	1,793	980	965	141	38
Mean percent of household's adults over 18 with occupation: ^b							
Employer	0.0	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Regular employee	19.6	15.7	19.9	14.8	24.4	18.2	8.2
Casual employee	28.8	32.5	28.6	29.2	28.7	32.6	29.1
Self-employed	16.2	21.3	15.9	16.7	15.4	17.8	33.7
Unpaid family worker	0.4	0.0	0.4	0.7	0.7	<u>0.0</u>	<u>0.0</u>
Apprentice	0.0	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Student	7.0	10.0	6.8	4.1	9.7	10.2	9.7
Pensioner/investor	1.3	0.0	1.4	0.9	1.6	<u>0.0</u>	<u>0.0</u>
Earning from investments/ property	1.0	0.0	1.0	1.0	1.0	<u>0.0</u>	<u>0.0</u>
Sick/unable to work	0.6	0.6	0.6	1.0	0.3	0.0	2.7
Unemployed looking for work	5.2	3.4	5.3	4.1	6.3	1.6	9.5
Unemployed, not looking for work now	8.6	6.8	8.7	13.6	4.0	7.7	4.3
Homemaker	10.7	9.6	10.7	13.8	7.5	11.8	2.8
N	966	96	870	470	481	71	24

Notes:

1. The category "Other" has been omitted.
2. These numbers are obtained by first computing the percentages of each household's members in each category, and then taking the mean of these percentages over all households.

B.2 Household Income/Expenditure Levels

There are two general approaches to measure spending power: expenditure and income, both of which are shown in the tables below. In the survey, income derives from household members' salaries, business earnings, rents, public cash support, and earnings from financial assets in the month prior to the interview, but does not include any remittances. Expenditures include all purchases, including investments for household-owned businesses. In theory, both approaches express the same amount of spending power, but typically one approach is not enough, especially when estimations are based on

survey data. This is because survey respondents' perceptions about their income and expenditures can be unreliable; estimates vary depending on seasonal changes in economic activities, type of assets owned, household's cash flows, and in-kind payments.

In practice, the expenditure approach is usually more accurate because most respondents, making purchases daily, recall their expenses better. Income, on the one hand, can be problematic because it can be subject to respondent mis-reporting (e.g., desire to impress the enumerator) and, with non-wage income; respondents do not generally make a clear distinction between revenue (sales) and income (revenue minus expenses). Using both methods, therefore, provides an additional level of verification.

About half (49%) of Kakamega households have monthly expenditures below the poverty line, as determined by the household composition. This proportion is fairly equal between formal and informal areas. Not surprisingly, poverty as measured by expenditures is significantly lower for households with tenure, a water connection, those that own a business, and those that work in a "skilled" profession as compared with those who do not.

Looking at the overall average expenditure distribution, 57% of Kakamega households have monthly expenditures between 9,001 and 30,000 Ksh. As indicated by the italics, the entire household expenditure distribution varies only by whether the households have a water connection and by head of household work skill status. As one may expect, households tend to spend significantly more when the head is a skilled worker; 16% of skilled worker headed households are at the highest two categories in the expenditure spectrum while only 7% with unskilled heads belong to this higher end. Perhaps contrary to expectations, there are almost no significant differences in expenditures when comparing informal and formal area households and male and female-headed households.

Overall average income distributions reveal somewhat more households at the lower end of the wealth spectrum than expenditures; 45% of households report they earn less than 9,001 Ksh per month, while only 31% reported they spent less than this per month. Income distributions vary significantly by water connection and the skilled status of the head of household. At the very lowest category of the income spectrum (less than 3,000 Ksh) there are significant differences by gender; 32% of female-headed households fall into the lowest income category while only 7% of male headed households fall into the lowest income category.

On average, households who sent money to individuals outside their household sent around 5,400 Ksh in the three months prior to the interview, and those that received money received over 10,000 Ksh during the same period. Households at the higher end of the expenditures spectrum (wealthier households) were steadily more likely to send money than those in the bottom—in the "Transfers" column, we see that 64% of households in the top expenditure category sent money to friends or relatives, compared to only 3% of those in the bottom category. However, the proportion of households receiving remittances (transferred income) was higher at the bottom and top end of the income categories (about 35% received transfers at the top and bottom of the income spectrum).

There was not enough data at the census tract level to test whether transfers and remittances differ significantly by household characteristics.

Table B.2a: Monthly household spending power, as measured by expenditure

Characteristic	All	Location		Household has...			House hold head is ^c		Gender (Informal)		Value of transfer (row pct.) ^d
		Informal areas	Formal areas	Tenure ^a	Water connection	A business ^b	Skilled	Unskilled	Male-headed	Female-headed	
Percent of house holds below poverty line	49	56	48	58	27	38	42	56	58	48	
N	951	95	856	226	179	103	490	461	71	23	
Mean expenditure (monthly KSh)	17,456	16,117	17,538	19,643	33,365	19,687	19,142	15,643	16,309	15,868	
N	966	96	870	229	182	108	497	469	71	24	
Percent of households with expenditure: ^d											
Less than 3,000 KSh	4	3	4	5	0	4	3	4	2	4	2,000 (3%)
3,001-6,000 KSh	13	11	13	10	3	5	14	13	12	10	2,543 (23%)
6,001-9,000 KSh	14	12	14	7	4	8	14	14	11	11	2,981 (24%)
9,001-30,000 KSh	20	20	20	22	8	23	17	24	23	11	3,096 (38%)
13,001-18,000 KSh	16	24	16	16	13	28	14	18	24	26	4,145 (43%)
18,001-30,000 KSh	21	20	21	24	28	17	21	20	16	34	5,999 (57%)
31,001-75,000 KSh	11	10	11	14	39	13	14	7	12	3	8,648 (62%)
Above 75,000 KSh	1	0	1	2	5	1	2	0	0	0	21,348 (64%)
N	966	96	870	229	182	108	497	469	71	24	392
Cash transfers ^e	6,541	6,115	7,392	4,948	14,591	8,839	7,475	5,702	5,935	5,755	
N	197	94	103	64	22	29	72	125	66	24	

- Notes:
- Household possesses deed or other officially recognized document conferring ownership of the structure, land, or both.
 - "Business" refers to a self-employed activity that may or may not entail household or wage employees.
 - Includes those self-declared as "skilled" as well as "professional".
 - An imputed 30-day value from responses over several periods (7 days for food, 30 days for other consumables, 12 months for durables and annual services). See Volume I of the Overview Report. No significance test performed on this column.
 - Transfers are cash outflows over last three months averaged over households with such flows (equal to proportion of row households in parentheses).

Table B.2b: Monthly household spending power, as measured by income

Characteristic	All	Location		Household has...			Household head is ^c		Gender (Informal)		Value of remittance (row pct.) ^e
		Informal areas	Formal areas	Tenure ^a	Water connection	A business ^(b)	Skilled	Unskilled	Male-headed	Female-headed	
Proportion of households with income: ^d											
Less than 3,000 KSh	9	12	9	10	1	10	4	14	7	32	5,899 (34%)
3,001-6,000 KSh	19	15	19	16	5	13	19	19	16	8	5,847 (31%)
6,001-9,000 KSh	17	24	16	18	7	14	15	19	26	19	14,686 (26%)
9,001-30,000 KSh	15	16	15	10	10	13	13	16	15	17	10,247 (27%)
13,001-18,000 KSh	13	19	12	11	8	16	13	13	23	9	6,379 (27%)
18,001-30,000 KSh	14	9	15	20	25	18	18	10	8	12	11,807 (22%)
31,001-75,000 KSh	11	5	12	13	33	12	15	7	5	3	15,383 (16%)
Above 75,000 KSh	2	0	3	2	11	4	3	2	0	0	25,301 (35%)
N	946	92	854	223	175	105	485	461	67	24	252
Cash remittances ^e	10,113	<u>27,341</u>	<u>9,011</u>	<u>7,336</u>	<u>16,822</u>	<u>13,414</u>	<u>11,698</u>	<u>9,083</u>	<u>35,737</u>	<u>16,410</u>	
N	256	25	231	87	57	33	103	153	12	13	

Notes:

- Household possesses deed or other officially recognized document conferring ownership of the structure, land, or both.
- "Business" refers to a self-employed activity that may or may not entail household or wage employees.
- Includes those self-declared as "skilled" as well as "professional".
- Total household cash income in KSh, previous month, not including in-kind income or cash assistance from/to family or friends who live outside the household. No significance test performed on this column.
- Remittances are cash inflows over last three months averaged over households with such flows (equal to proportion of row households in parentheses).

B.3 Household Wealth Composition

The "household wealth index" is calculated from the household's declared ownership of a list of common household items. The value itself is created by totaling the estimated value of each item (indicated in brackets, in USD), converting to KSh, and dividing by 1,000; so the average of 35.6 means that the average household owned approximately 35,600 KSh worth of listed possessions. However, since each possible possession was only counted once, this should not be taken as a reliable estimate, but rather a unitless index of comparison.

This index of household wealth is significantly higher in formal vs. informal areas and non-poor vs. poor households, but not for male-headed vs. female headed households. There are significant differences by area type in the holdings of all classes of durables, with higher holdings in formal areas. There are significant differences between poor and non-poor households, with higher holdings in non-poor households, except in farm animal holdings. There are no significant differences by gender of household head in the holdings of any classes.

Home and land values questions had a high number of missing or “don’t know” responses, which means that the averages shown are drawn from a relatively small group and tests of statistical significance were not possible. The data reveals that for those who owned homes alone values averaged 6,946,000 KSh while for those who owned both home and land combined values averaged only 2,481,000 KSh.

Table B.3: Household wealth composition

Characteristic	All	Location		House hold poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Index of household wealth ^a	35.6	22.7	36.4	30.5	40.6	23.0	22.9
N	966	96	870	470	481	71	24
Household’s average holdings of:							
Class-1 durables (furniture, pans, iron, mosquito net) [7]	5.8	4.9	5.8	5.3	6.2	4.9	5.3
Class-2 durables (stove, sewing machine, fan, wheelbarrow, water storage tank) [60]	1.4	1.1	1.4	1.2	1.6	1.1	1.1
Class-3 durables (refrigerator, washing machine, electric generator, bicycle) [100]	0.3	0.1	0.3	0.2	0.3	0.1	0.0
Farm animals (poultry and livestock) [200]	0.5	0.3	0.5	0.6	0.5	0.3	0.4
Entertainment equipment (radio, TV, satellite dish, DVD, video player) [80]	1.6	1.2	1.6	1.2	1.9	1.3	1.1
Motorized transport (motorcycle [400], car [1,000])	0.0	0.0	0.1	0.0	0.1	0.0	0.0
N	966	96	870	470	481	71	24
Value of primary residence, not its land (in 1,000 KSh) ^b	6,946	<u>240</u>	<u>7,335</u>	<u>277</u>	<u>8,692</u>	<u>372</u>	<u>372</u>
N	29	3	26	8	21	2	1
Value of primary residence and its land (in 1,000 KSh) ^b	2,481	<u>1,727</u>	<u>3,255</u>	<u>1,727</u>	<u>3,255</u>	<u>100</u>	<u>543</u>
N	118	3	115	64	54	1	2
Value of other land and/or residence (in 1,000 KSh) ^c	470	<u>125</u>	<u>491</u>	<u>179</u>	<u>701</u>	<u>236</u>	<u>16</u>
N	33	3	30	14	19	2	1

Notes:

- This is a class-weighted average of the number of items as disaggregated in this same table, multiplied by the weight given within the square brackets [].*
- About 87% of the sample had missing values for this amount, though at about the same frequency across the categories of this table. About half the sample that declared owning land or a residence failed to report its value. Averages are only over households with the asset. See “Proportion of Owners” in Table C.1. Note that values in the last three rows of the table are divided by one thousand.*
- Since the survey does not ask the value of these, they have been imputed as a percent of primary residence value where it was declared (see Footnote (b)). These imputations are: land in city (10%), land outside city (5%), residence only in city (40%), and residence only outside of city (28%). If household has both land and structure these are scored separately and added together. In the case where the land of primary residence is not owned the value of the residence is first doubled before the imputations are made.*

B.4 Household Finance

Approximately 67% of all households in Kakamega have a bank account, a number that differs significantly only by poverty status, where nearly 81% of the non-poor have a bank account while only 53% of the poor have a bank account. The percentage of households with loans is extremely low, summing to 10% including all sources of loans; bank loans are significantly higher for households in formal vs. informal areas and among non-poor vs. poor households. Consistent with findings mentioned above, far more households

(44%) sent money to people not living at the household than received money (28%). Households are significantly more likely to send money if they reside in formal areas vs. non-formal areas. There were no significant differences by category in the percent of households receiving cash from those not living at their residence.

Table B.4: Household finance

Characteristic	All	Location		House hold poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of households with a bank account	67	59	68	53	81	57	68
N	966	96	870	470	481	71	24
Percent of households with a loan	9	7	9	5	13	3	17
N	965	95	870	469	481	70	24
Percent of households with a loan from a...							
Bank	4	1	4	2	6	57	68
Microfinance institution	2	1	2	1	2	0	4
Savings/credit group or co-op	4	3	4	3	5	2	7
Relative/friend	0	1	0	0	0	0	6
Informal lender	0	0	0	0	0	0	0
N	966	96	870	470	481	71	24
Percent of HHs receiving cash from those not now living at residence ^a	28	31	28	28	29	26	51
N	966	96	870	470	481	71	24
Percent of HHs sending cash to those not now living at residence ^a	44	31	45	40	47	33	23
N	966	96	870	470	481	71	24

Notes:

a. Over the previous twelve months.

B.5 Household-Owned Business Profile

Eleven percent of households own a business, most of which (74%) engage in some form of selling. These businesses tend to be fairly new and quite small, as the average age for a business is just over one year and the average number of employees is two and a half. About half of all businesses are not registered at all (52%) and 44% are registered with a local authority; most businesses report paying local market fees (59%) or business permits (21%). The relatively low number of observations at the census tract level means that it is not possible to perform tests of statistical significance for most of Table B.5.

Table B.5: Household-owned business profile

Characteristic	All	Location		House hold poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of house hold with business ownership, last 12 months	11	18	10	8	13	16	23
N	966	96	870	470	481	71	24
Type of business: ^a							
Manufacturing	13	0	14	16	12	0	0
Selling	74	89	73	62	82	92	81
Transport	4	0	5	7	2	0	0
Professional (including Internet)	1	0	1	3	0	0	0
Other (barber, cleaning, etc.)	8	11	8	13	5	8	19
N	108	17	91	38	65	12	5
Years in operation	1.1	1.6	1.1	0.8	1.2	2.1	0.5
N	108	17	91	38	65	12	5
Number of employees	2.5	1.3	2.7	1.3	3.4	1.3	1.2
N	108	17	91	38	65	12	5
Which are...							
Household members	1.2	1.1	1.2	1.2	1.3	1.0	1.2
N	108	17	91	38	65	12	5
Non-household members	1.3	0.2	1.4	0.2	2.1	0.3	0.0
N	108	17	91	38	65	12	5
Revenue in previous month ^b	17,171	6,944	18,150	8,311	22,537	6,061	8,866
N	88	13	75	29	55	9	4
Registration status:							
Local authority (municipal or city council)	44	55	43	40	50	55	55
Kenya Revenue Authority	6	0	6	2	8	0	0
Registrar of Companies	3	0	3	0	4	0	0
None of the above	52	45	53	58	46	45	45
N	108	17	91	38	65	12	5
Share of businesses making fiscal contributions:							
Daily market local fee	59	71	58	63	57	67	81
Single business permit local fee	21	15	22	9	30	13	19
Value Added Tax	5	0	6	2	7	0	0
N	108	17	91	38	65	12	5

Notes:

- a. Households were allowed to choose more than one category so these figures may exceed 100%.
- b. Average over only those businesses operating over the period.

DWELLING TENURE, SECURITY, AND CHARACTERISTICS

C.1 Household Dwelling Characteristics

On average, households in Kakamega have 1.8 members per room, a ratio that is higher and statistically significant in informal vs. formal areas and poor vs. non-poor households, but not for male-headed vs. female-headed households. Households have less than one bathroom on average, and 33% of households have a kitchen; both figures are higher and statistically significant in formal vs. informal areas and poor vs. non-poor households, but again do not vary significantly by gender.

About 54% of households in Kakamega use charcoal as their primary cooking fuel, and 23% use firewood. The remainder use paraffin, but primary cooking fuels differ significantly by area. In informal areas even more (67%) use charcoal and only 7% use firewood. Non-poor households are more likely to use gas and less likely to use firewood than poor households. Cooking fuel did not vary significantly by gender.

Most households are renters (67%), with 31% owning in some form and only 22% owning their land and structure. In formal areas households are much more likely to own and less likely to rent vs. informal areas; in formal areas, 25% own land and building, while only about 4% own both in informal areas. Ownership did not vary significantly by gender of head of household.

Only 16% report that the area around their dwelling floods during heavy rains, but figure that is significantly and numerically much higher in informal areas (34%) than in formal areas. Sixteen percent of households in informal areas say they are susceptible to mudslides, as compared to only 7% in formal areas. Flooding and mudslides also differ significantly by poverty status. Few households overall report that they live within a ten-minute walk of a formal or informal garbage dump, or that they are exposed to factory pollution in their neighborhood. None of the hazards differed significantly by gender.

Quality of housing varies significantly across location and by poverty status. More poor households have an earth or clay floor (36%), compared to non-poor households (18%). Almost all households have an iron or grass roof, and the proportion is similar across formal vs. informal areas and in poor vs. non-poor households. Only 48% of households have stone or brick walls, although it is significantly more common in formal areas than informal areas, and among non-poor vs. poor households.

Table C.1: Household dwelling characteristics

Characteristic	All	Location		House hold poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Number of persons per room	1.8	2.2	1.8	2.1	1.5	2.3	2
N	965	96	869	470	480	71	24
Number of bathrooms	0.3	0.2	0.3	0.2	0.4	0.2	0.2
N	966	96	870	470	481	71	24
Proportion of residences with kitchen	33	22	34	26	41	22	25
N	966	96	870	470	481	71	24
Primary cooking fuel:							
Electricity	0	0	0	0	1	0	0
Paraffin or kerosene	11	11	11	11	10	13	0
Gas	11	15	11	4	19	16	11
Charcoal	54	67	53	53	54	65	79
Firewood	23	7	24	31	16	6	10
N	962	96	866	466	481	71	24
Proportion of households that:							
Total	100	100	100	100	100	100	100
Owens the land only	1	0	1	1	0	0	0
Owens structure only	7	4	7	6	8	2	10
Owens land and structure	23	4	25	28	20	3	6
Rents	67	92	65	62	71	95	83
Squats	2	0	2	3	1	0	0
N	966	96	870	470	481	71	24
Pct. of House holds in areas subject to ^a :							
Flooding ^b	16	34	14	19	12	34	30
Mudslides ^c	7	16	7	11	4	17	13
10 minute walk to formal or informal garbage dump	1	0	1	0	2	<u>0</u>	<u>0</u>
Factory pollution (air, water, noise)	0	0	0	0	1	<u>0</u>	<u>0</u>
N	966	96	870	470	481	71	24
Housing quality:							
Pct. with earth/clay floor	27	36	27	36	18	35	38
Percent with corrugated iron roof	97	97	97	99	96	97	97
Percent with grass roof	0	0	0	0	0	0	0
Percent with stone/brick/block walls	48	35	49	35	60	38	28
N	966	96	870	470	481	71	24

Notes:

- All data is self-reported, and therefore subjective.
- Households reported that the area floods during heavy rains.
- Households reported that they are located on a hillside that is subject to mudslides.

C.2 Home and Land Ownership

Most Kakamega households are renters (67%), with only a small percentage (23%) owning their land and structure. Fully 99% of households in Kakamega feel they have secure tenure; this is likely influenced by the fact that none of the households have been evicted in the last 12 months. The majority of landowners have a freehold title for their land (85%); the next-most common category is to have no documentation (9%). There is not enough data at the census tract level to test for significant differences in ownership status or documentation.

On average, households have lived in their current dwelling for 6.6 years and in their current neighborhood for 8.3 years. These figures vary significantly by area: households in formal areas have been in their dwelling and neighborhood for longer than those in informal areas. Perhaps surprisingly, the poor have been in their dwelling and neighborhood for longer than the non-poor. Finally, the number of years in the neighborhood (but not the dwelling) is significantly higher for male-headed households than for female-headed households.

Table C.2: Household residence and land tenure

Characteristic	All	Location		House hold poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of households that:							
Total	100	100	100	100	100	100	100
Own the land only	1	0	1	1	0	0	0
Own structure only	7	4	7	6	8	2	10
Own land and structure	23	4	25	28	20	3	6
Rent	67	92	65	62	71	95	83
Squat	2	0	2	3	1	0	0
N	966	96	870	470	481	71	24
Percent of households that feel secure in ownership	99	100	99	99	99	100	100
N	229	4	225	137	89	2	2
Variability of households feeling secure ^a	0	0	0	0	0	0	0
N	229	4	225	137	89	2	2
Percent of households that experienced eviction	0	2	0	1	0	0	7
N	966	96	870	470	481	71	24
Proportion of household owners by type of land-possession document:							
Total	100	100	100	100	100	100	100
None	9	0	9	7	10	0	0
Freehold title	85	45	85	84	85	18	100
Temporary occupation license	2	0	2	2	1	0	0
Share certificate	1	0	1	1	2	0	0
Government certificate of title ^b	3	34	2	4	1	51	0
Letter from chief (provincial administration)	1	21	1	1	1	31	0
Other	0	0	0	0	0	0	0

Characteristic	All	Location		House hold poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
N	262	5	257	152	107	3	2
Neighborhood mobility							
Years in dwelling	6.6	4.6	6.7	7.6	5.6	6.7	3.6
N	966	96	870	470	481	871	71
Years in neighborhood	8.3	5.8	8.4	9.5	7.2	8.4	4.4
N	965	96	869	469	481	71	24
Home loan payment as a percent of spending power ^c	21	<u>21</u>	-	<u>36</u>	<u>17</u>	-	-
N	7	7	0	1	6	0	0

Notes:

- Computed as the intra-class correlation coefficient, where the "class" is the EA. This measures the extent to which households within an EA resemble each other in their feelings of security in ownership. No significance tests performed on this row.
- Long-term lease from City council/Government.

For loan payments, there very few observations; they are only for informal, poor, and male-headed households.

Computed only for those with a housing loan.

C.3 Distribution of Housing Values and Rents

The average value of homes in Kakamega is about 1.12 million KSh, but 47% of all home values are between 9,000-299,999 KSh. Among rent-paying tenants, the average rent is 2,200 KSh per month, with households fairly evenly distributed along the rent level spectrum, save for the 2,000-3,499 KSh category, which captures 31% of average monthly rents. In most of this table there were not enough observations at the census tract level to test for differences among different categories of households.

Table C.3: Distribution of housing values and rents

Characteristic	All	Location		Household has...			Household head is... ^c		Gender (Informal)	
		Informal areas	Formal areas	Tenure	Water connection	A business	Skilled	Un-skilled	Male-headed	Female-headed
Average home value (1,000 KSh) ^a	1,116	<u>1,410</u>	<u>1,076</u>	<u>1,475</u>	<u>2,464</u>	<u>1466</u>	<u>810</u>	<u>1,179</u>	<u>1,031</u>	<u>5198</u>
N	107	14	93	75	29	40	21	86	11	2
Distribution of home values: Total	100	100	100	100	100	100	100	100	100	100
1-8,999 KSh	6	<u>20</u>	<u>4</u>	<u>1</u>	<u>5</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>19</u>	<u>48</u>
9,000-299,999 KSh	47	<u>34</u>	<u>48</u>	<u>35</u>	<u>6</u>	<u>47</u>	<u>61</u>	<u>44</u>	<u>45</u>	<u>0</u>
300,000-999,999 KSh	17	<u>17</u>	<u>17</u>	<u>23</u>	<u>44</u>	<u>23</u>	<u>7</u>	<u>19</u>	<u>5</u>	<u>0</u>
1,000,000-2,499,999 KSh	20	<u>13</u>	<u>22</u>	<u>28</u>	<u>24</u>	<u>14</u>	<u>13</u>	<u>22</u>	<u>17</u>	<u>0</u>
2,500,000-250,000,000 KSh	10	<u>16</u>	<u>9</u>	<u>13</u>	<u>21</u>	<u>13</u>	<u>13</u>	<u>10</u>	<u>14</u>	<u>52</u>
N	106	14	92	75	29	40	21	85	11	2
Average monthly rent (tenants) ^b	2,200	<u>1,787</u>	<u>2,274</u>		<u>4,058</u>	<u>2,461</u>	<u>2,795</u>	<u>1,897</u>	2,001	1,481

Characteristic	All	Location		Household has...			Household head is... ^c		Gender (Informal)	
		Informal areas	Formal areas	Tenure	Water connection	A business	Skilled	Un-skilled	Male-headed	Female-headed
N	694	101	593		212	138	238	456	65	32
Distribution of monthly rents: Total	100	100	100		100	100	100	100	100	100
1-899 KSh	18	40	14	-	1	15	7	23	41	35
900-1,499 KSh	18	12	19	-	3	24	12	21	9	16
1,500-1,999 KSh	15	15	14	-	4	17	12	16	12	19
2,000-3,499 KSh	31	24	32	-	29	21	39	27	26	24
3,500-150,000 KSh	18	9	20	-	63	23	30	12	11	5
N	694	101	593		212	138	238	456	65	32

Notes:

- Self-reported, current, monthly, fair-market price (response to the question, "If you were to sell your house, how much do you think you could sell it for?").
- Excludes imputed owner-occupied rents.
- Includes those self-declared as "skilled" as well as "professional".

C.4 Neighborhood Social Capital and Civic Participation

Table C.4 presents findings on households' civic participation, social activism, and social capital. Only 9% of households reported contacting their local council within the last two years, and 23% attended a local forum. Owners were significantly more likely than renters to engage in these types of civic participation; owners contacted local official and attended forums at rates of 19% and 40%, respectively. Interestingly, those in the lower half of infrastructure access were significantly more likely to have attended a local forum. The rates of civic participation did not significantly differ by gender or area.

For local elections, turnout was relatively high (43%) and turnout was even higher for the 2007 elections and 2010 referendum (77% and 78%, respectively). Those in the lower half of infrastructure access were significantly more likely than those in the upper half to have voted in local elections. Male-headed households were significantly more likely to have voted in the 2007 elections than female-headed households, and a larger proportion of owners than renters voted in nearly all types of elections. Fully 57% of households reported having an informal community or neighborhood leader; this was significantly higher among those in the lower half of infrastructure access vs. upper, and significantly higher among owners than renters. Only 3% of households took part in a public demonstration or protest in the last two years.

The survey asked respondents whether people in their neighborhood would cooperate if asked by an official to conserve water or electricity because of an emergency, and whether people in their neighborhood look out for each other. On both questions, the results were positive. When asked if people in their community would cooperate if asked by an official, the results averaged 3.1 on a four-point scale (where 4="very likely" and 1="very unlikely" to cooperate). When respondents were asked if they agreed that people look out and trust each other in their neighborhood, answers averaged 3.7 on a five-point scale (where 1="strongly disagree" and 5="strongly agree"). On both cooperation questions, the only significant differences were between formal and informal areas, which are nearly equal numerically.

The majority of households (70%) reported feeling safe in their neighborhood, with no significant differences by any category.

Table C.4a: Neighborhood social capital and civic participation

Characteristic	All	Location		Access to infrastructure ^a		Gender (Informal)		Tenure ^b	
		Informal areas	Formal areas	Lower half	Upper half	Male-headed	Female-headed	Own	Rent
Civic participation									
Percent of households... contacting local council	9	10	9	9	8	11	8	19	4
N	966	96	870	486	480	71	24	288	678
attending a neighborhood forum	23	24	23	24	22	23	25	40	16
N	966	96	870	486	480	71	24	288	678
Social activism									
Percent of households voting in...local election ^c	43	42	43	47	38	38	54	54	38
N	966	96	870	486	480	71	24	288	678
2007 general election ^c	77	73	77	75	78	80	54	87	72
N	966	96	870	486	480	71	24	288	678
2010 referendum ^c	78	72	78	75	80	77	60	88	73
N	966	96	870	486	480	71	24	288	678
Percent of households with informal community or neighborhood leader	57	56	57	63	50	52	66	72	49
N	887	90	797	466	421	66	23	283	604
Percent of households that took part in a public demonstration or protest	3	4	3	3	3	5	0	3	3
N	966	96	870	486	480	71	24	288	678

Notes:

- Defined by dividing the population in half based on a score assigned using responses from thirteen infrastructure-related questions (see Section 3 of Introduction.)
- Alternatively, this could be the length of time living in the neighborhood: less/more than (say) 2 years.
- Out of all households and not just those registered to vote.

Table C.4b: Neighborhood social capital and civic participation

Characteristic	All	Location		Access to infrastructure ^a		Gender (Informal)		Tenure ^b	
		Informal areas	Formal areas	Lower half	Upper half	Male-headed	Female-headed	Own	Rent
Social capital									
Average HH response to:									
People in my neighborhood cooperate if asked by an official ^c	3.1	3.0	3.1	3.1	3.1	3.0	2.9	3.1	3.1
N	937	96	841	478	459	71	24	288	649
People in my neighborhood look out for/trust each other ^d	3.7	3.6	3.7	3.6	3.7	3.6	3.6	3.8	3.7
N	966	96	870	486	480	71	24	288	678
Proportion of HHs feeling safe from crime in own neighborhood	70	65	70	66	74	61	78	66	72
N	966	96	870	486	480	71	24	288	678

Notes:

- Defined by assigning scores using responses from thirteen infrastructure-related questions.
- Alternatively, this could be the length of time living in the neighborhood: less/more than (say) 2 years.
- Four-point scale where 1="Very unlikely" to 5="Very likely".
- Five-point scale where 1="Strongly disagree" to 5="Strongly agree".

D.1a Water Access

Over half of households have direct access to piped water (36% in compound and 18% directly into the dwelling), while 75% report having nearby access (within 50 meters) to piped water. Direct access to water in the dwelling or compound is significantly more common among non-poor than poor, while access to piped water in the compound is also more common in formal areas than in informal areas. Only piped water access in the compound varies significantly by respondents' security in their home ownership, where "secure" represents owners who feel no one could force them to leave without an official legal process in which they would participate, "insecure" represents owners who feel they could be forced out, and "rent" represents those who rent their homes and therefore have no security of ownership as well as squatters and those who own their dwelling but not land. On average, it takes respondents 40 minutes a day to obtain water, including travel to and from the water source, waiting time, and filling time. Water costs an average of 629 KSh a month. There was not enough data at the census tract level to test for statistically significant differences between categories of households for the cost of water in time or money.

Despite the fact that 36% of households have direct access to piped water in their dwelling or compound, only 17% of respondents report that piped water is their most important water source. Some 30% of households report a shared yard tap as most important. There are significant differences in primary water source across several categories. By ownership status, there are only 5 "insecure" households, but secure households are more likely to use a well or outside water source than renters, who are more likely to use a shared tap. Vendors as a primary source are significantly more common in informal areas, while a shared tap is significantly more prevalent in formal areas. Although few households report piped water as their primary water source, non-poor households are significantly more likely than poor households to cite piped water as their primary source (24% vs. 9%).

Of the households that didn't have access to piped water, the main reason given (45%) was because they rented rather than owned their home and their landlord would not pay for a connection; the second most common reason (34%) was inability to afford the initial connection (although relatively few were unable to afford a water bill), and 10% said service was not available. There was not enough data at the census tract level to test for statistically significant differences between categories of households for the reasons for lack of access to a water connection.

Table D.1a: Water access

Characteristic	All	Security of ownership ^a			Location		Household poverty		Gender (Informal)	
		Secure	Insecure	Rent	Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of households with private piped water connection inside dwelling	18	17	0	19	15	19	10	26	16	13
N	966	225	4	737	96	870	470	481	71	24
Percent of households with piped water connection in compound	36	27	0	39	23	37	29	42	20	34
N	966	225	4	737	96	870	470	481	71	24
Percent of households close to piped water access ^b	75	58	100	81	88	73	69	82	88	87
N	476	134	4	338	59	417	300	169	47	11
Monthly cost of water in ... Time (minutes) ^c	1,180	1,857	414	903	1,390	1,165	1,351	946	1,212	2,192
N	516	145	4	367	58	458	311	198	46	11
Money (KSh)	629	715	-	607	524	637	547	701	538	480
N	542	105	0	437	72	470	238	296	53	19
Most important water source: Total	100	100	100	100	100	100	100	100	100	100
Piped	17	16	0	17	15	17	9	24	16	13
Bottled	0	0	0	0	0	0	1	0	0	0
Shared tap connection	30	19	0	34	22	30	25	35	19	34
Vendor (kiosk, tanker, other)	12	4	0	14	25	11	15	9	27	18
Neighbor(s)	7	3	0	9	12	7	5	9	12	15
Well/borehole	7	13	0	5	6	7	7	7	8	0
Natural source outside household	26	44	100	20	20	26	37	15	19	20
N	966	225	4	737	96	870	470	481	71	24
No connection due to:	100	100	100	100	100	100	100	100	100	100
Other sources available	10	26	0	3	7	10	10	10	5	13
Renting ^d	45	0	0	64	76	42	44	45	78	66
Can't afford connection	34	57	71	25	17	36	36	31	17	16
Can't afford monthly bill	3	1	29	4	0	4	1	7	0	0
Provider has waiting list	4	8	0	3	3	6	3	6	3	7
No service available	10	30	12	4	3	21	11	11	4	0
Other	1	3	0	1	1	2	1	1	1	0
N	520	169	4	347	251	269	254	241	200	47

Notes:

- Self-reported; "secure" includes owners who feel no one could force them to leave without an official legal process in which they would participate, "insecure" includes owners who feel they could be forced to leave without an official legal process, and "rent" includes renters, squatters, and people who own their structure but not land.
- Respondents were asked whether there were dwellings or businesses within 50 meters of their home that had a piped water connection in the dwelling or compound.
- Calculated as the sum of time spent travelling, waiting in line, and filling containers.
- House does not have a connection and landlord will not pay for one.

D.1b Water Quality

For nearly every primary water source, 90% or more rated the quality of water as “good,” with the exception of those using well/boreholes and natural sources—in those households, only 69% and 74% of rated the quality of water as “good” and almost all of the rest rated the water quality as “fair.” Almost all households (95%) said they used a public water provider. In Kakamega, 50% of households treat their drinking water—this percent is significantly higher among households living in formal vs. informal areas and among those above the poverty line as compared to those below it. Of those who treat their drinking water, 76% rate their water quality as “good”; the most common method of water treatment is boiling. For water providers and treatment method, there was typically not enough data at the census tract level to test for significance.

Table D.1b: Water quality

Characteristic	All	Household poverty		Location		Water quality					Gender (Informal)	
		Poor	Non-poor	Informal areas	Formal areas	Good	Fair	Poor	Total	N	Male-headed	Female-headed
Water source: ^a	17	9	24	15	17	89	<u>10</u>	<u>1</u>	100	169	16	13
Piped												
Bottled	0	1	0	0	0	100	<u>0</u>	<u>0</u>	100	1	0	0
Shared tap connection	30	25	35	22	30	92	<u>7</u>	<u>1</u>	100	291	19	34
Other vendor	12	15	9	25	11	94	<u>6</u>	<u>0</u>	100	127	27	18
Neighbor(s)	7	5	9	12	7	94	<u>6</u>	<u>0</u>	100	59	12	15
Well/Borehole	7	7	7	6	7	69	<u>26</u>	<u>5</u>	100	67	8	0
Natural outside-Household source	26	37	15	20	26	74	<u>22</u>	<u>4</u>	100	245	19	20
N	966	470	481	96	870	829	123	14			71	24
Water provider:	95	95	<u>95</u>	100	95	91	8	1	100	463	<u>100</u>	<u>100</u>
Public												
Private	0	1	<u>0</u>	<u>0</u>	<u>0</u>	<u>100</u>	<u>0</u>	<u>0</u>	100	1	<u>0</u>	<u>0</u>
Self	4	4	<u>4</u>	<u>0</u>	<u>4</u>	<u>93</u>	<u>7</u>	<u>0</u>	100	19	<u>0</u>	<u>0</u>
Community	0	0	<u>1</u>	<u>0</u>	<u>0</u>	<u>100</u>	<u>0</u>	<u>0</u>	100	2	<u>0</u>	<u>0</u>
N	485	169	309	37	448	445	36	4			24	13
Percent of households treating drinking water	50	47	54	35	51	76	<u>20</u>	<u>4</u>	100	488	30	55
N	966	470	481	96	870	829	123	14			71	24
Treatment method: ^b	21	<u>18</u>	<u>24</u>	<u>11</u>	<u>22</u>	<u>74</u>	<u>18</u>	<u>8</u>	100	101	<u>10</u>	<u>12</u>
Boiling												
Add bleach/chlorine	59	<u>55</u>	<u>62</u>	<u>78</u>	<u>58</u>	<u>74</u>	<u>22</u>	<u>3</u>	100	293	<u>22</u>	<u>23</u>
Other (sieve, filter, settle)	25	<u>32</u>	<u>19</u>	<u>15</u>	<u>26</u>	<u>83</u>	<u>16</u>	<u>1</u>	100	121	<u>15</u>	<u>15</u>
N	488	219	263	35	453	376	98	14			22	13

Notes:

a. Most important water source.

b. Since multiple responses were permitted, the sum can exceed 100%. Likewise, “Other” is not shown, since it was negligible, so the sum may also be less than 100%.

D.2a Electricity and Waste-Disposal Services

Only 42% of respondents reported access to electricity, a figure that differs significantly by poverty level (56% of non-poor have access vs. 27% of the poor) but not by location or gender of head of household. Reasons for not having a connection are similar to those for water—the primary reason reported was that households did not own their home and didn’t have a choice (47%), followed by inability to pay for the initial connection (44%). In this section there were not enough observations at the census tract level to test for differences among different categories of households.

No respondents reported functional street lighting in their area. The average monthly cost of electricity is 845 KSh, with 5% of households not paying for electricity at all. Eighty-eight percent of households pay a utility company, while a few households either pay as part of their rent or directly to their landlord (8%). In Kakamega, 62% of households experience power outages at least once per week.

To dispose of their garbage, most households either burn (61%) or dump (36%) their trash; only 1% dispose of refuse through a city, community, or private collection system. Forty-five percent of households report they must pay for garbage collection. Dumping is significantly more common in informal area and among poor households than non-poor households, while burning is more common among the wealthier households and those in formal areas. There were no significant differences by gender of head of household.

Table D.2a: Access to electricity and waste-disposal

Characteristic	All	Location		Household poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Electricity							
Proportion of households with access to electricity	42	34	43	27	56	37	27
N	966	96	870	470	481	71	24
Reason for no connection: Total	100	100	100	100	100	100	100
Renters	<u>47</u>	<u>83</u>	<u>45</u>	<u>46</u>	<u>50</u>	<u>87</u>	<u>71</u>
Firm has waiting list	<u>3</u>	<u>0</u>	<u>3</u>	<u>1</u>	<u>5</u>	<u>0</u>	<u>0</u>
Cannot afford connection	<u>44</u>	<u>16</u>	<u>46</u>	<u>49</u>	<u>36</u>	<u>12</u>	<u>29</u>
Cannot afford monthly bill	<u>3</u>	<u>1</u>	<u>3</u>	<u>2</u>	<u>6</u>	<u>2</u>	<u>0</u>
Other	<u>2</u>	<u>0</u>	<u>2</u>	<u>1</u>	<u>3</u>	<u>0</u>	<u>0</u>
N	555	61	494	350	197	43	17
Percent of households with mostly functioning street lighting	0	0	0	0	0	0	0
N	966	96	870	470	481	71	24
Average monthly bill, KSh	845	<u>770</u>	<u>847</u>	<u>784</u>	<u>877</u>	<u>763</u>	<u>791</u>
N	966	96	870	470	481	71	24
Percent of households not paying for electricity	5	19	4	10	2	24	0
N	297	21	276	84	208	17	4
Payment to: Total	100	100	100	100	100	100	100
Utility	88	<u>88</u>	<u>88</u>	<u>85</u>	<u>90</u>	<u>84</u>	<u>100</u>
Prepaid card	2	<u>0</u>	<u>3</u>	<u>0</u>	<u>4</u>	<u>0</u>	<u>0</u>
Landlord	8	<u>0</u>	<u>8</u>	<u>12</u>	<u>5</u>	<u>0</u>	<u>0</u>

Characteristic	All	Location		Household poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Third party (from utility power line)	1	<u>12</u>	<u>0</u>	<u>2</u>	<u>0</u>	<u>16</u>	<u>0</u>
N	283	18	265	75	203	14	4
Percent of households with outages at least once weekly	62	<u>72</u>	<u>62</u>	<u>65</u>	<u>61</u>	<u>75</u>	<u>56</u>
N	408	35	373	119	282	28	7
Refuse disposal							
Main method:							
Dumping	36	48	35	43	28	50	41
Burying	1	2	1	1	1	3	0
Burning	61	49	62	56	68	45	59
Collection system(a)	1	1	1	0	2	1	0
N	966	96	870	470	481	71	24
Proportion of HHs paying for collection	45	<u>0</u>	<u>46</u>	<u>0</u>	<u>52</u>	0	-
N	13	1	12	3	10	1	0

D.2b Access to Sanitation Services

Only 19% of households have a toilet in their home, but a private toilet is more than twice as common among non-poor vs. poor households and twice as common in formal areas than informal ones. Most households use an individual pit latrine (56%); 21% use a public/shared latrine and 22% use a flush toilet. In formal areas, pit latrines are significantly more common while public/shared latrines are significantly more common in informal areas. The use of flush toilets is significantly higher in non-poor vs. poor households (30% vs. 14%). Sixty-four percent of households report they share their toilet with other households, and 10% share with ten or more others. By area, the differences in sharing are significant and large; in formal areas, 37% of households have their own toilet, while in informal areas only 15% have their own toilet; this also varies significantly by poverty status.

The majority of households (78%) use a pit latrine as their toilet disposal system. Pit latrine disposal is significantly higher in informal areas vs. formal, among poor vs. non-poor households;

Grey water, i.e. used kitchen or bath water, is poured onto the road by 32% of households and dumped into a nearby drain by 59% of households. Poor households are more likely to pour grey water onto the road than non-poor households, and informal area households are similarly more likely to pour grey water onto the road than those in formal settlements.

D.3 Access to Transport

Sixty-five percent of respondents said they work outside the neighborhood. The main modes of travel to work or school are walking (70%), bike taxi (15%) and *matatus* (10%).¹⁵ The figures on mode of transportation are generally too dispersed to note differences by household characteristics, but those in informal areas are significantly more likely to walk than those in formal areas, and students are significantly more likely to walk than workers. Only two percent of household members even among the non-poor drove to work or school in their own vehicle.

The average time it takes household members to get to work/school is 20 minutes and the average cost is 72 KSh; travel time is very similar between those who study and those who work, but the difference is significant.

Table D.3: Access to transport

Characteristic	All	Household activity ^a		Location		Household poverty		Gender (Informal)	
		Work	Study	Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent who work or study...									
inside the neighborhood	33			42	32	31	34	40	53
outside the neighborhood	65			57	65	66	64	59	46
inside and outside the neighborhood	3			1	3	2	2	1	2
N	1,504			155	1,349	700	782	117	36
Main mode of travel(b) Walk	70	72	90	80	69	80	59	79	84
Bicycle	2	3	0	2	2	3	1	2	0
Own vehicle	1	0	0	0	1	0	2	0	0
Matatu	10	2	1	2	10	5	15	2	1
Shared taxi	0	0	0	0	0	0	1	<u>0</u>	<u>0</u>
Bike taxi	15	20	3	12	15	10	19	13	12
Municipal bus	1	0	1	1	1	0	1	0	3
N	2,203	115	103	218	1,985	1,108	1,060	159	57
Transport time (minutes)	20	19	19	19	21	20	21	20	15
N	2,160	113	97	210	1,950	1,088	1,038	151	57
One-way trip cost to work/school (KSh)	72	<u>38</u>	<u>31</u>	<u>37</u>	<u>73</u>	<u>63</u>	<u>77</u>	<u>37</u>	<u>36</u>
N	575	29	8	37	538	178	390	28	9
Households with road access as: Poor	41			46	40	37	45	49	38
Good	59			54	60	63	55	51	62
N	966			96	870	470	481	71	24
Percent of households with limited road access during rainy season	21			21	21	17	24	20	26
N	966			96	870	470	481	71	24

Notes:

a. Informal areas only.

b. To work or to school. May not add to 100% since "Other", which was negligible, is not reported in table.

¹⁵ A "matatu" is a 14-seater minivan used throughout Kenya as a form of public transport.

Fifty-nine percent of households reported having good road access. Twenty-one percent of all households said they had limited road access during the rainy season; surprisingly, this figure was significantly lower among poor households than non-poor households.

D.4 Access to Communications

Virtually no households have a functioning land line, but each household owns an average of 1.7 mobile phones, and there is a small but statistically significant increase in the number of mobile phones owned by non-poor vs. poor households and in formal areas vs. informal areas. Mobile banking (such as M-PESA) is at 86%, and the rate of mobile banking usage increases significantly for non-poor vs. poor households. Overall, only 6% of households have a functioning computer, but this rate is 9% non-poor households vs. 2% poor ones and the difference is significant. Eighteen percent of households use the internet. Internet use is much higher among non-poor vs. poor households (29% vs. 8%), but internet use does not vary significantly by location or gender of household head.

Table D.4: Access to communications

Characteristic	Location			Household poverty		Gender (Informal)	
	All	Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Percent of households with functioning land line	0	0	0	0	0	0	0
N	966	96	870	470	481	71	24
Average number of mobile phones owned by household	1.7	1.5	1.7	1.5	1.9	1.5	1.4
N	965	96	869	469	481	71	24
Percent of households using mobile banking	86	86	86	80	92	84	93
N	966	96	870	470	481	71	24
Percent of households with functioning computer	6	9	6	2	9	12	0
N	966	96	870	470	481	71	24
Percent of households using internet (any means)	18	15	19	8	29	15	15
N	965	96	869	469	481	71	24

D.5 Access to Infrastructure Indicator

The access to infrastructure indicator combines six categories of infrastructure (divided into 13 subcategories) weighted by importance to the household and summed to create a household indicator from 0 to 9.5.¹⁶ Higher scores represent better access to infrastructure. This indicator provides an overall understanding of a household's infrastructure access. By averaging households' scores on the indicator, we can quickly compare infrastructure access in informal and formal areas, between poor and non-poor households, and between male- and female-headed households in informal areas.

¹⁶ The 13 subcategories are: piped water (1 point); shared/indirect connection (0.5 points); direct electricity access (1); street lighting (0.5); garbage collection system (1); own toilet (1); shared toilet with less than 20 other people (0.5); legal sewer system for toilet (0.5); grey water not poured onto street (0.5); good road access at dwelling (0.5); road access not limited during rainy season (0.5); no flooding (1); no mudslides (1).

Table D.5 presents household mean scores on the access-to-infrastructure indicator. The mean score across all households in Kakamega is 4.05. Households in formal areas score significantly higher than households in informal areas, and the difference in mean scores is nearly one, which is notable—this means that on average informal area households have one less service available to them. There are also significant differences between poor and non-poor households (3.54 and 4.53, respectively) of the same magnitude, but no significant differences in infrastructure score by gender.

Table D.5: Access to infrastructure indicator

Characteristic	All	Location		Household poverty		Gender (Informal)	
		Informal areas	Formal areas	Poor	Non-poor	Male-headed	Female-headed
Mean score on access to infrastructure indicator	4.05	3.25	4.10	3.54	4.53	3.28	3.18
N	966	96	870	470	481	71	24

CONCLUSIONS

The following three figures are “Development Polygons”. These polygons are meant to complement the detailed tables presented in sections A through D by illustrating an “overall” sense of the state of the city. We present information for all areas, along with formal and informal areas, in each of the three figures: the Development Diamond, the Infrastructure Polygon, and the Living Conditions Diamond.¹⁷ In all figures, the value labels included provide the value of the indicator for all areas. The statistics underlying these figures are also in the tables, above. Similar graphics also appear in the City-at-a-Glance Reports and the Overview Report produced under the NORC contract. The axes for all figures represent percentages. Polygons with larger areas represent a “better” situation in regards to the associated indicator(s). Hence, a polygon with full coverage would indicate that the city is doing very well in terms of development, infrastructure, or living conditions.

The Development Diamond (Figure 1) maps four indicators of poverty—welfare, employment, education, and living conditions. Fifty-one percent of all households have expenditures above the poverty line—52% in formal areas and 44% in informal areas. Sixty-nine percent of all adults 18 and older reported that they were working (69% in formal areas, 75% in informal areas). The percent completing primary school—64% overall—is about the same in formal and non-formal areas. Finally, 16% of households in formal areas have permanent walls and access to both piped water and electricity compared to only 10% of households in informal areas.

The Infrastructure Polygon, shown in Figure 2, presents residents’ access to ten different types of infrastructure – piped water, electricity, private toilets, sewage, drainage, garbage collection, street lighting, mobile phones, public transport, and good roads. Piped water and electricity are much more prevalent in formal areas (51% and 43%, respectively) than informal areas (37% and 34%). Private toilets are much less common overall, but we still find large differences by area type—only 10% of households in informal areas, compared to 19% in formal areas, have a private toilet. Sewage follows

Figure 1: Development diamond

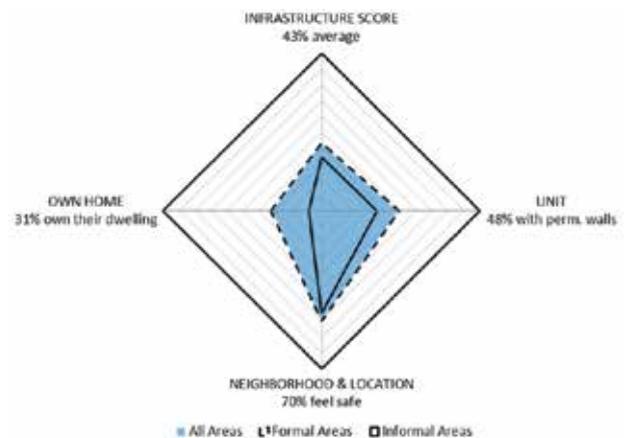
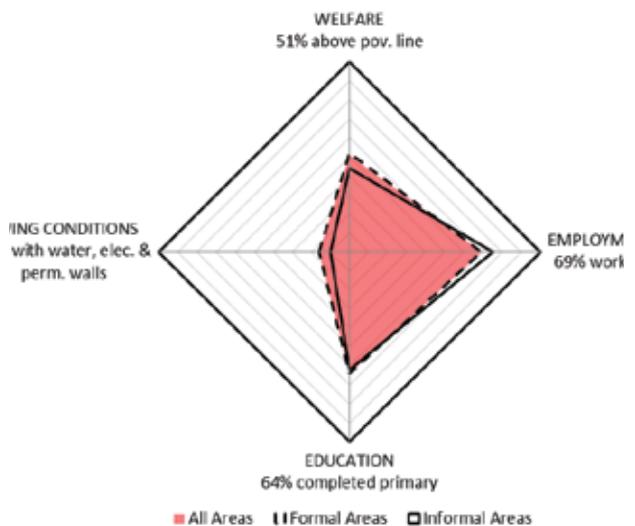


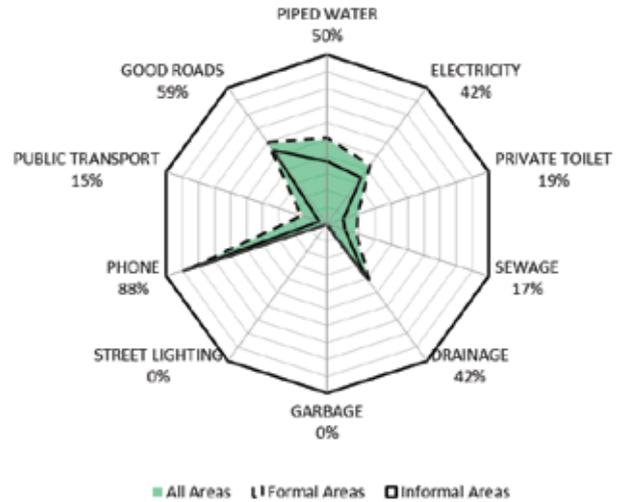
Figure 2: Infrastructure polygon



¹⁷ The basic format for all three figures appear in the World Bank Policy Research Working Paper, “Poverty, Living Conditions, and Infrastructure Access” A Comparison of Slums in Dakar, Johannesburg, and Nairobi” by Sumila Gulyani, Debabrata Talukdar, and Darby Jack (2010). We strived to make our own figures as similar as possible, though some deviations, noted in the accompanying text, were necessary.

a similar trend. Forty-two percent of all households report drainage for rain, and the rates in formal and informal areas are nearly equal. Very few households report that they have garbage collection or street lighting. Mobile phone usage is nearly ubiquitous, as 88% of all households own one or more mobile phones. Only 15% of all households report using public transport—16% in formal areas and only 5% in informal areas. Finally, 59% of households (54% in informal areas and 60% in formal areas) said that their access road was in good condition. Figure 3 presents the Living Conditions Diamond. The four axes of this diamond are the infrastructure score (scaled to a percentage of the total possible points), unit conditions, neighborhood and location, and home ownership. The first two indicators have coverage around 45% overall and within formal areas, with informal areas lagging behind by about 10%. Seventy percent of households (70% in formal areas, 65% in informal areas) said they feel safe in their neighborhood. Overall, 31% of households own their dwelling. In informal areas, however, the rate of home ownership is much lower at only 8%.

Figure 3: Living conditions diamond



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